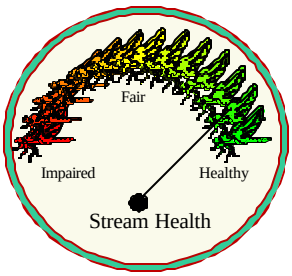


EcoSummary

Rainbow Springs

04/16/02



Background

Florida DEP's Division of Recreation and Parks selected Rainbow Springs, as well as several other springs from state parks, for biological and water quality monitoring. Data from these efforts will be used for documenting conditions within each park and for making resource protection decisions. Rainbow Springs State Park is located in Marion County, Florida (Figure 1). The Rainbow River begins in the park from numerous spring vents and then flows south into the Withlacoochee River. Rainbow Springs is a Floridan Aquifer-dominated system and is known for its recreational and aesthetic qualities. Water quality characteristics vary from spring vent to spring vent, so a sampling location in the spring run was selected to document overall effects.

Samples were taken at Rainbow Springs in April 2002. Water chemistry samples were taken for ammonia, nitrate-nitrite, total Kjeldahl nitrogen, total phosphorus, color, turbidity, *Enterococci*, *Escherichia coli*, fecal coliform, and total coliform analysis (see Figure 2). Habitat assessment, qualitative periphyton sampling, and benthic invertebrate stream condition index (SCI) sampling were also conducted.

Results

The nitrate-nitrite concentration (1.2 mg/L) at the sampling site remained similar to the results from October 2001, and were again higher than those found in 95% of Florida streams (see Figure 2). As in previous sampling events, elevated nitrite-nitrate levels in Rainbow Springs River are related to nitrogen loading in the recharge basin (mostly inorganic fertilizers applied to pasture). Ammonia, total Kjeldahl nitrogen, and total phosphorus concentrations were below quantitation limit (see figure 2). The overall habitat assessment score (144) was in the optimal range (>120). Only the water velocity continued to receive a marginal score. As in October 2001, *Enterococci* and *E. coli* concentrations complied with the EPA "designed beach area" single sample guidelines of 61 CFU/100mL and 235 CFU/100mL, respectively. Fecal and total coliform levels also complied with Class III water quality standards (800 CFU/100mL and 2400 CFU/100mL, respectively). The stream condition index (SCI) score of 29 for Rainbow Springs was in the "excellent" range. The periphyton community in Rainbow Springs remains dominated by diatoms with some blue-green taxa. The particular taxa found were indicative of eutrophic conditions, which was not surprising given the nutrient enrichment in Rainbow Springs.

In conclusion, although elevated nitrate-nitrite levels and a relatively low-quality algal community continue to exist in Rainbow Springs, the overall health of the spring, as indicated by the invertebrate communities, has remained in excellent condition.

Figure 1: Overview Map of the Rainbow Springs Area

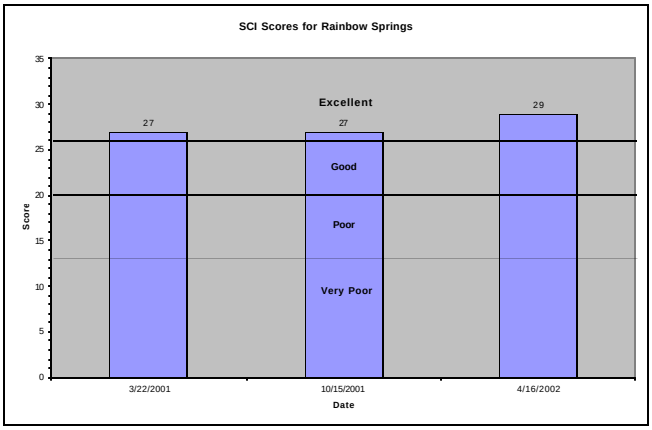


Figure 2: Data Table

Rainbow Springs			
STORET		23010409	
Sampling Date		4/16/2002	
Macroinvertibrate Parameters		**Periphyton Parameters**	
SCI	29	% Bacillariophyceae	75.4
SCI Evaluation	Excellent	% Cyanophyceae	24.02
Number of Taxa	32	% Chlorophyceae	0.58
EPT Index	4	Dominant taxon	*Nitzschia*
FL Index	9	Percent Dominant taxon	37.63
% Dominant Taxon	18.42	**Physical-Chemical Data**	
% Diptera	40.35	Habitat Assessment	144
Total number of Chironomidae	13	Specific Conductivity (umhos/cm)	260
% Filter-Feeders	14.04	Dissolved Oxygen (mg/L)	9.34
Chemistry Data		pH (SU)	7.67
Ammonia (mg/L)	0.018 I	Temperature (deg C)	23.4
Nitrate-Nitrite (mg/L)	1.2 J	**Bacteria Parameters**	
TKN (mg/L)	0.06 U	*Enterococci* (col/100mL)	12 Q
Total Phosphorus (mg/L)	0.035 I	*Escherichia coli* (col/100mL)	6 Q
Color (PCU)	5 U	Fecal Coliforms (col/100 mL)	4 Q
Turbidity	0.1	Total Coliforms (col/100mL)	30 Q

"U"- Value Reported is the Minimum Detection Limit; "I"-Value Reported is Less Than the Minimum Detection Limit, and Greater Than or Equal to the Minimum; "Q"- Sample Held Beyond Normal Holding Time; "J"- Estimated Value

Figure 3: SCI Scores Graph



FOR MORE INFORMATION, CONTACT:
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